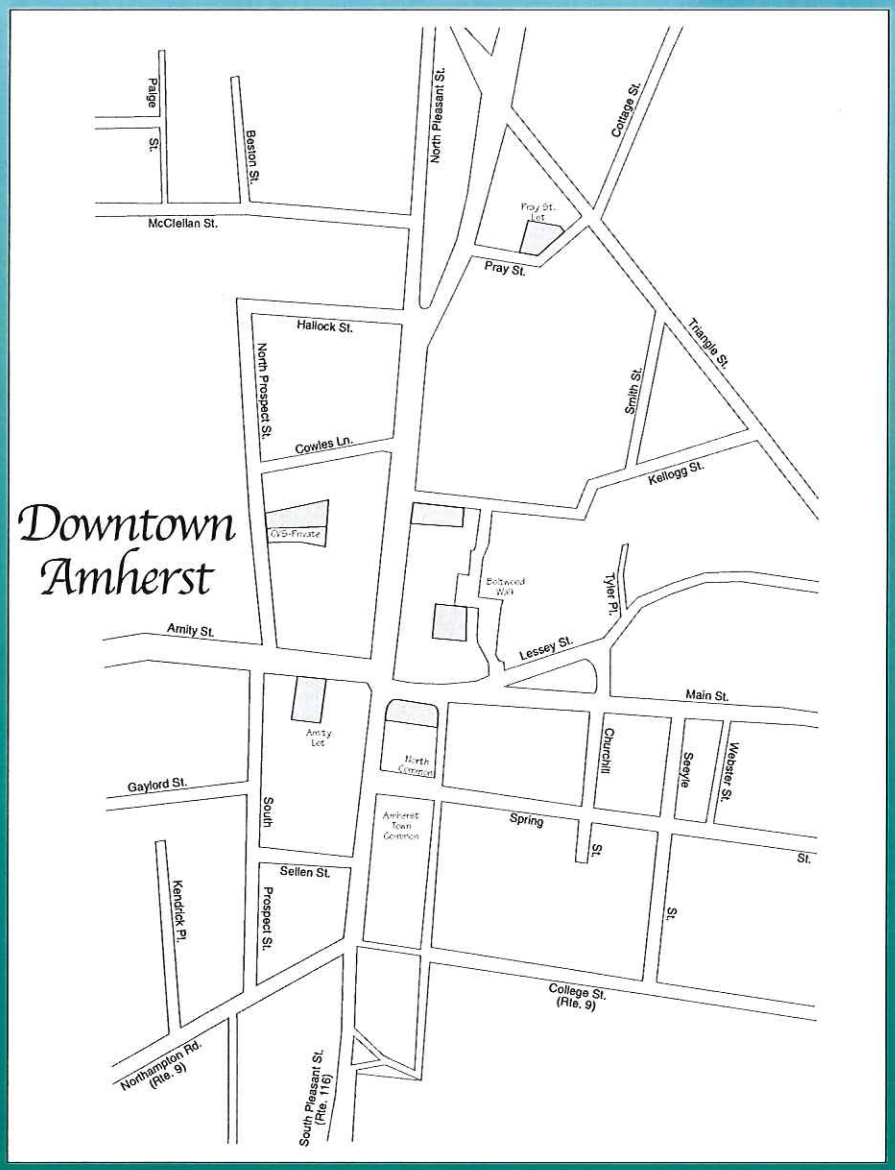
Parking Study
Draft Report

DRAFT

For **Town of Amherst**



Prepared by:
Pioneer Valley Planning Commission

May 1999

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I. INTRODUCTION

As the request of the Town of Amherst, the Pioneer Valley Planning Commission (PVPC) has conducted a parking study for the Town as part of our current Unified Work Program. The purpose of a parking survey (or parking usage study) is to provide great detail on the efficiency of existing parking facilities and determine the physical needs for revising or increasing the existing parking supply. This report presents a summary of the existing parking inventories, parking survey results, and recommends improvements to alleviate parking problems.

Study Area

The study area for the proposed Amherst Parking Study as shown in Figure 1 includes the public parking facilities within the Central Business District (CBD) and proposed CBD permit areas in the downtown area. The major streets in the study area include North Pleasant Street, South Pleasant Street (Route 116), Main Street, and Amity Street. On-street parking (or curb parking) spaces are provided on these major streets and side streets throughout the CBD. Off-street public parking spaces (or parking lots) are located on Pray Street, behind CVS, Boltwood Walk, the North Common area, and Amity Street. The private parking spaces in the CVS parking lot are included in the study area.

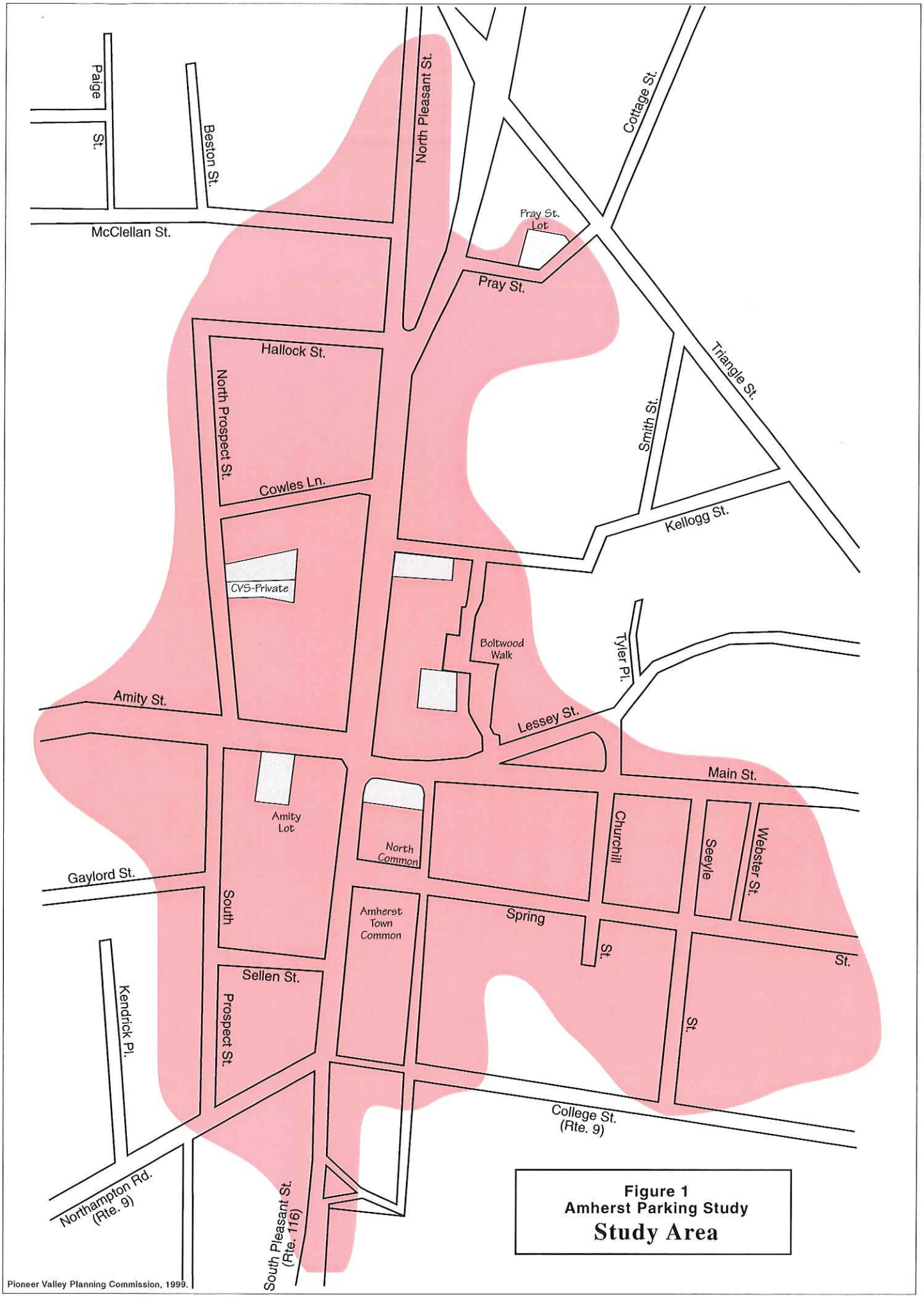


Figure 1
Amherst Parking Study
Study Area

II. METHODOLOGY

Parking inventories are intended to gather information on parking supply and its use, so it is an essential pre-requisite to any parking study. Parking inventories include observations of the number of parking spaces and their location, time restrictions, and the type of parking facility. In order to facilitate the recording of parking locations, the study area is divided into several blocks and block faces (East, West, North, or South). Inventory data can be displayed in tabular summaries as an initial component of the parking usage studies.

Accumulation (or occupancy) checks and license plate checks are the two types of usage studies used in this study. Parking accumulation is the total number of vehicles parked at any given time. The purpose of accumulation checks is to establish hourly variations and peak parking demand. These occupancy studies can be performed by using maps with field sheet tables to record the total number of parked cars in each block. Each field sheet table shows the location of each block and the number of legal spaces in each block.

License plate checks are the technique used to observe turnover for parking usage studies. Turnover is defined as the average number of cars parked per day during the study period in each space of a given block face. These license plate checks are most often performed by an individual at 30-minute intervals, walking a particular route and recording the license plate numbers of vehicles occupying each parking space. The last three digits of license number of each parked vehicle are entered in the field sheet for each defined parking space. A check mark is used when the same vehicle is parked at subsequent checks. Trucks, double parking and illegal parking are illustrated with special notations.

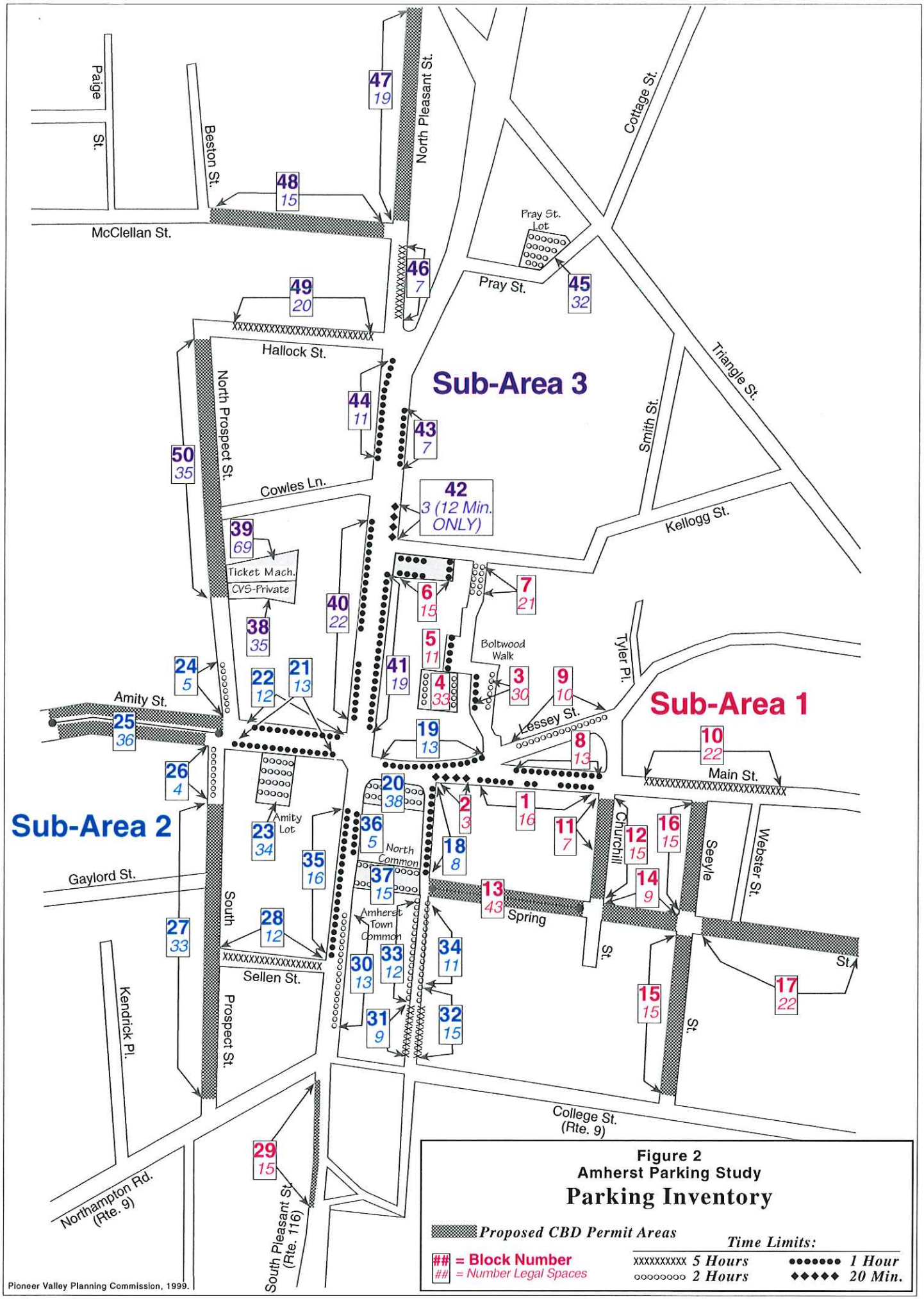
III. PARKING INVENTORIES

As the initial component of the parking survey, an inventory of the number of both on-street and off-street parking systems in the study area was conducted. The parking inventory is shown in Figure 2. Since some curb spaces were not marked, it was assumed that each space would occupy 18 feet of curb within the study area. A total of 926 parking spaces were identified in the downtown area.

IV. PARING USAGE STUDIES

The parking survey was performed for one day on Thursday, April 8 and selected peak hours on Friday, April 9, 1999. The study hours for the survey are divided into three time periods with a one-hour break between each time period. Thus, the study hours are from 7 AM to 10 AM, 11 AM to 2 PM, and 3 PM to 6 PM on Thursday and from 9 AM to 10 AM, 12PM to 1 PM, and 4 PM to 6 PM on Friday. The study area is divided into three subareas: subarea 1 includes block 1 to block 17, subarea 2 includes block 18 to block 37, and subarea 3 includes block 38 to block 50. The block numbers are shown in Figure 2. One observer performed 30-minute checks along a fixed route and recorded either the license plate numbers of parked cars or the number of parked cars in each block for each subarea. Parking occupancy data was collected for the entire study area. Parking turnover information was collected by recording the last three license plate characters at the following locations.

1. On-street one hour meter parking spaces on the east and west side of North Pleasant Street from Main Street to the Town Common.
2. On-street one hour meter and 20-minute meter parking spaces on Boltwood Avenue.
3. On-street one hour meter and 20-minute meter parking spaces on the north and south side of Main Street from North Pleasant Street to Churchill Street.
4. Off-street one hour meter parking spaces on the west side of the Noah Webster House in the Boltwood Walk area.
5. On-street one hour meter and 20-minute meter parking spaces on the east side of North Pleasant Street from Amity Street to Hallock Street.


Sub-Area 1
Sub-Area 2
Sub-Area 3
Paige St.
Beston St.
McClellan St.
North Pleasant St.
Cottage St.
Pray St. Lot
Pray St.
Triangle St.
Smith St.
Kellogg St.
Hallock St.
North Prospect St.
Cowles Ln.
Ticket Mach.
CVS-Private
Boltwood Walk
Tyler Pl.
Lessey St.
Main St.
Amity St.
Amity Lot
Gaylord St.
South Prospect St.
Sellen St.
Kendrick Pl.
North Common
Amherst Town Common
Churchill
Seeyle
Webster St.
Spring St.
College St. (Rte. 9)
Northampton Rd. (Rte. 9)
South Pleasant St. (Rte. 116)
47 19
48 15
46 7
49 20
45 32
44 11
43 7
50 35
42 3 (12 Min. ONLY)
39 69
40 22
38 35
6 15
7 21
5 11
4 33
3 30
9 10
41 19
24 5
22 12
21 13
25 36
19 13
8 13
10 22
26 4
20 38
2 3
1 16
23 34
36 5
18 8
11 7
12 15
16 15
35 16
37 15
13 43
14 9
27 33
28 12
30 13
33 12
34 11
31 9
32 15
15 15
17 22
29 15
Figure 2
Amherst Parking Study
Parking Inventory
Proposed CBD Permit Areas
= Block Number
= Number Legal Spaces
Time Limits:
xxxxxxxxx 5 Hours
oooooooo 2 Hours
●●●●●●● 1 Hour
◆◆◆◆◆ 20 Min.
Pioneer Valley Planning Commission, 1999.

V. SURVEY RESULTS AND RECOMMENDATIONS

The Amherst parking survey results are summarized in figures and tabulated for both Thursday, April 8, 1999 and Friday, April 9, 1999. Figure 3 presents a summary of parking accumulation during the one day survey on Thursday. As shown on this figure, the peak demand for parking spaces was observed at 1:00 PM when 766 vehicles were parked. This constitutes 92% of the practical capacity of 833 spaces. It is assumed that 90% of spaces can be utilized at one time which defines practical capacity. The figure shows that the entire area's parking facility is highly utilized at noon. Figure 4 presents a summary of parking accumulation of peak hours survey on Friday. As shown on Figure 4, the peak demand for parking spaces also occurred at 1:00 PM when 781 vehicles were parked. Consequently, the parking accumulation follows the same pattern on both Thursday and Friday with the peak demand for parking spaces occurring at 1:00 PM.

Summary statistics on parking usage during the one day survey on Thursday along 50 individual blocks are provided in Table 1. As shown, the free parking spaces on Seeyle Street from College Street to Spring Street (block 15) and those on North Pleasant Street from McClellan Street to Triangle Street (block 47) were fully utilized throughout the day. The parking spaces on Main Street from Churchill Street to Dickinson Street (block 10) had the lowest average utilization of 3% throughout the day. This is most likely due to the free parking available on the side streets south of Main Street in this area. The highest average turnover rate of 1.44 (vehicles/hour/stall) was found on North Pleasant Street from Cowles Lane to Hallock Street (block 43) because of the short trips to the post office. A high turnover rate corresponds with a low duration rate, which is the length of time that individual vehicles remain parked. This can be used to evaluate time restrictions on existing parking meters. The average duration rate in block 43 (one hour meters) was 0.67 (hours/vehicle), which indicates most of the cars parked for approximately one half hour. The highest violation rate of 34% occurred on Boltwood Walk in front of the Noah Webster House (block 3). The average duration rate for block 3 was 1.46 (hours/vehicle) at one hour meters and 1.24 (hours/vehicle) for the two hour meters.

The peak hours survey statistics from Friday are provided in Table 2. As shown, the parking spaces on McClellan Street from Beston Street to North Pleasant Street (block 48) were fully utilized throughout the day. The parking spaces on Main Street from Churchill Street to Dickinson Street (block 10) and those on Hallock Street from North Pleasant Street to North Prospect Street (block 49) had the lowest average utilization of 10% throughout the day. Main Street from Boltwood Avenue to Boltwood Walk (block 2) and Boltwood Walk in front of the Noah Webster House (block 3) had the highest violation rate of 18%. The average duration rate for the one hour parking in block 3 was 1.07 (hours/vehicle) and for the two hours parking in block 3 was 0.95 (hours/vehicle). North Pleasant Street from Kellogg Street to Cowles Lane (block 42) had the highest average turnover rate of 1.89 (vehicles/hour/stall) and North Pleasant Street from Cowles Lane to Hallock Street (block 43) had the second highest average turnover rate of 1.86 (vehicles/hour/stall). The average duration rate in block 43 (one hour meters) was 0.66 (hours/vehicle), which indicates most of the cars parked for one half hour for the short trips to the post office.

Figure 3
Parking Accumulation
One Day Survey on Thursday

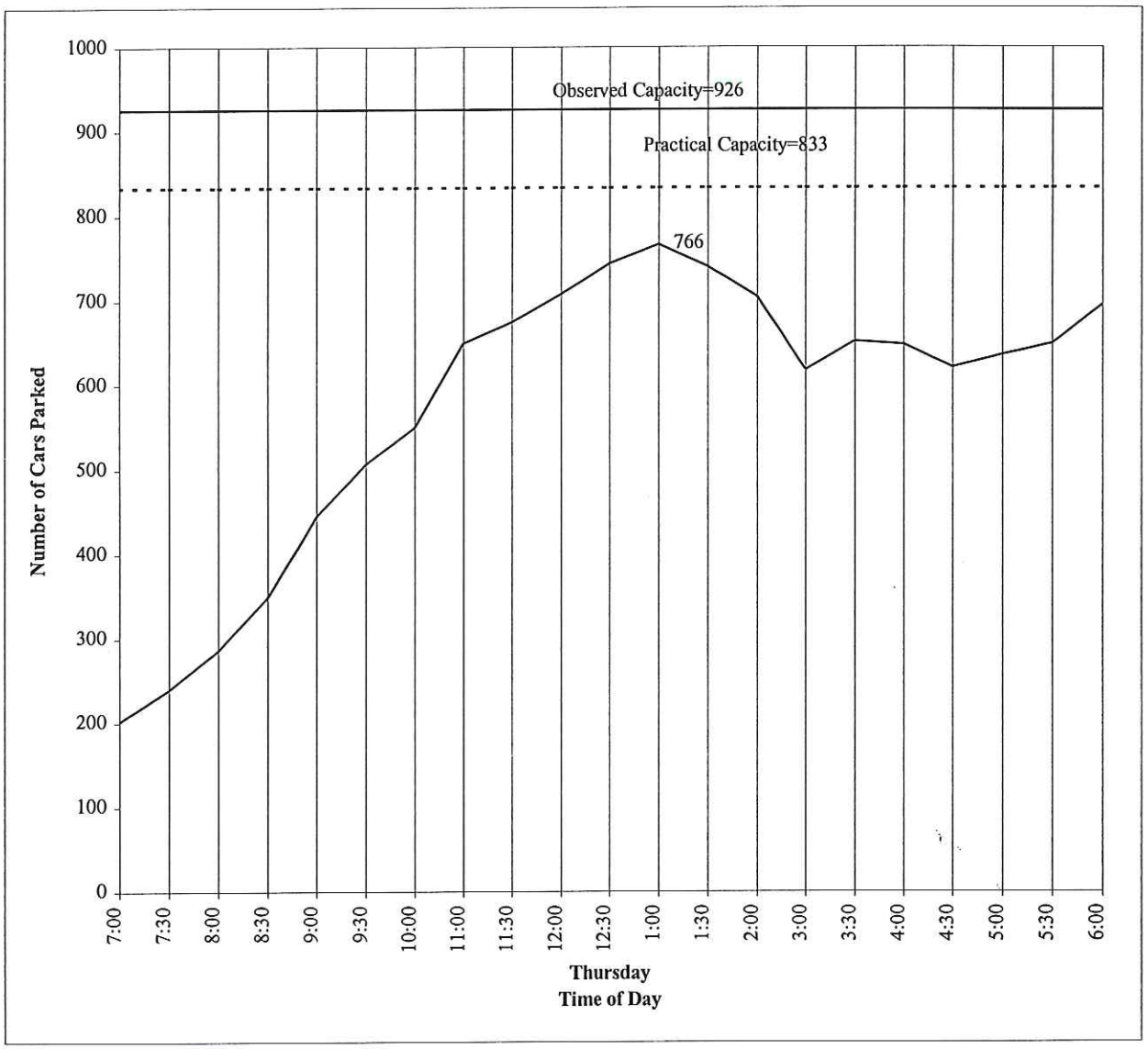


Figure 4
Parking Accumulation
Peak Hours Survey on Friday

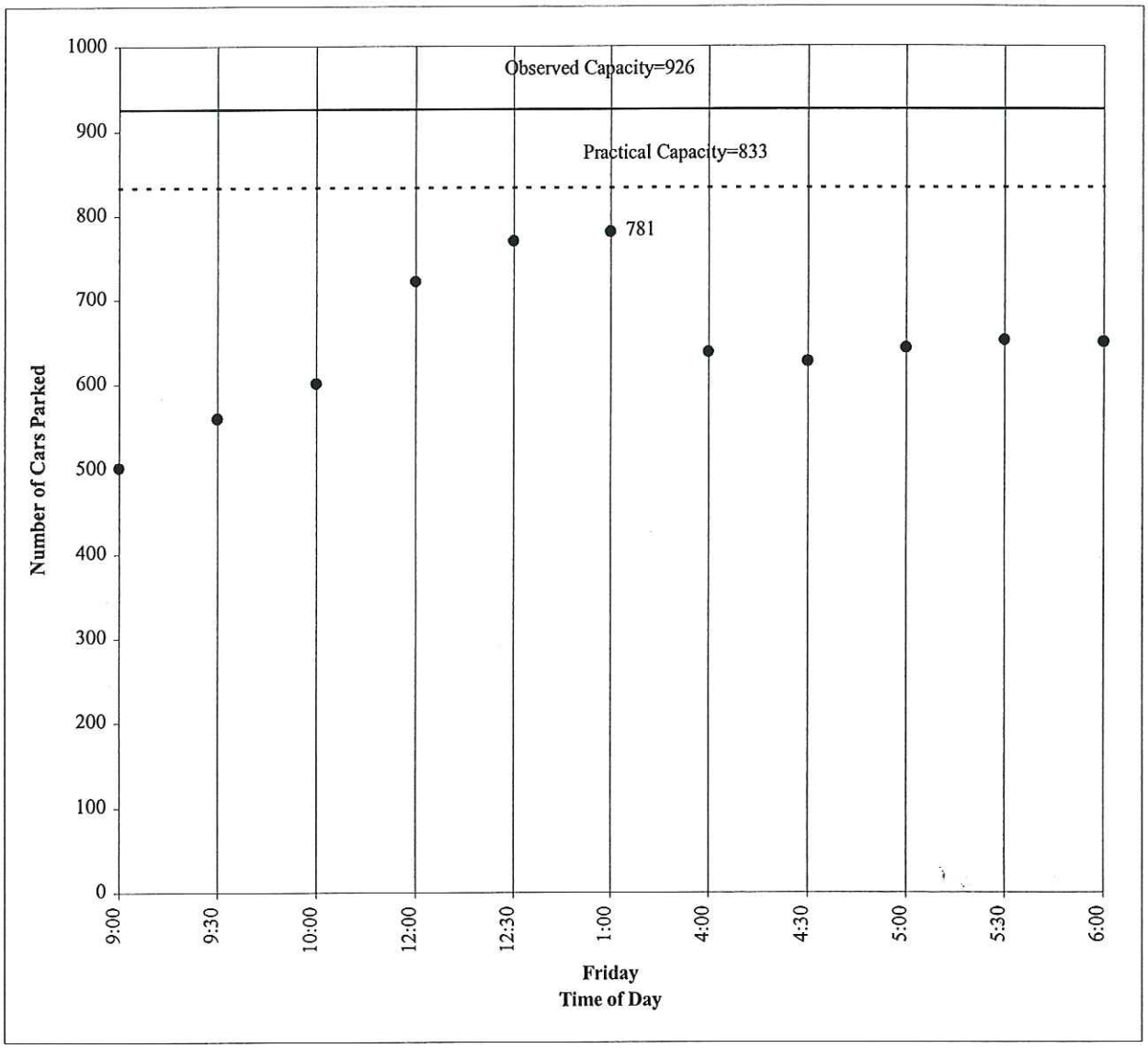


Table 1
Parking Characteristic
One-Day Survey on Thursday

Block	Street	Segment	Side	Legal Spaces	Average Utilization (%)	Parking Turnover Rate (veh/stall/hr)	Violation Rate (%)*	Comments
1	Main St.	Boltwood Walk - Churchill St.	S	15	63%	0.94	15%	peak utilization at noon
2	Main St.	Boltwood Ave. - Boltwood Walk	S	3	56%	1.11	14%	peak utilization at noon & late afternoon
3	Boltwoood Walk	Noah Webster House	EW	30	75%	0.66	34%	low turnover rate & very high violations rate
4	Boltwoood Walk	Antonios Pizza	E	33	76%	-	-	peak utilization at noon & late afternoon
5	Boltwoood Walk	Bangs Community Center	W	11	48%	-	-	peak utilization at noon & late afternoon
6	Boltwoood Walk	Unitarian Meeting House	E	15	73%	-	-	peak utilization from late morning to late afternoon
7	Boltwoood Walk	Ann Whalen House	W	21	80%	-	-	peak utilization from late morning to late afternoon
8	Main St.	Lessey St. - Churchill St.	N	13	57%	0.94	10%	peak utilization at noon
9	Lessey St.	Churchill St. - Boltwood Walk	N	10	61%	-	-	peak utilization at noon
10	Main St.	Churchill St. - Dickinson St.	N	22	3%	-	-	very low utilization during survey time
11	Churchill St.	Main St. - Spring St.	W	7	80%	-	-	peak utilization from late morning to late afternoon
12	Churchill St.	Main St. - Spring St.	E	15	80%	-	-	peak utilization from late morning to late afternoon
13	Spring St.	Churchill St. - Boltwood Ave.	NS	43	94%	-	-	very high utilization during survey time
14	Spring St.	Seeyle St. - Churchill St.	N	9	39%	-	-	low utilization during survey time
15	Seeyle St.	College St. - Spring St.	W	15	100%	-	-	very high utilization during survey time
16	Seeyle St.	Main St. - Spring St.	W	15	47%	-	-	very low utilization during survey time
17	Spring St.	Dickinson St. - Seeyle St.	S	22	28%	-	-	very low utilization during survey time
18	Boltwood Ave.	Main St. - Spring St.	E	8	68%	0.82	26%	high violations rate & peak utilization after noon
19	Main St.	N.Pleasant St. - Boltwood Walk	N	13	73%	1.03	19%	peak utilization after noon
20	Town Common	N.Pleasant St. - Main St.	NS	38	66%	-	-	peak utilization after noon
21	Amity St.	N.Pleasant St. – S. Prospect St	S	13	64%	-	-	peak utilization after noon
22	Amity St.	N.Pleasant St. – N. Prospect St.	N	12	70%	-	-	peak utilization after noon
23	Amity St.	Amherst Cinema	EW	34	50%	-	-	low utilization during survey time
24	N. Prospect St.	Amity St. – Cowles Ln.	W	5	31%	-	-	very low utilization during survey time
25	Amity St.	S.Prospect St. – Lincoln Ave.	NS	36	78%	-	-	peak utilization at noon
26	S. Prospect St.	Amity St. – Gaylord St.	W	4	42%	-	-	peak utilization at late afternoon
27	S. Prospect St.	Amity St. – Northampton Rd.	W	33	76%	-	-	peak utilization at noon
28	Sellen St.	N.Pleasant St. – S. Prospect St.	N	12	58%	-	-	peak utilization at noon
29	S. Pleasant St.	College St. – Hitch Rd.	W	15	68%	-	-	peak utilization at noon
30	S. Pleasant St.	College St. – Spring St.	E	13	31%	-	-	very low utilization during survey time
31	Boltwood Ave.	College St. – Spring St.	W	9	19%	-	-	very low utilization during survey time
32	Boltwood Ave.	College St. – Spring St.	E	15	30%	-	-	very low utilization during survey time
33	Boltwood Ave.	College St. – Spring St.	W	12	32%	-	-	very low utilization during survey time
34	Boltwood Ave.	College St. – Spring St.	E	11	37%	-	-	very low utilization during survey time
35	S.Pleasant St.	Amity St. – Sellen St.	W	16	60%	0.92	15%	peak utilization at late afternoon
36	S.Pleasant St.	Main St. – Spring St.	E	5	66%	1.02	6%	peak utilization after noon

Table 1 (Continued)
Parking Characteristics
One-Day Survey on Thursday

Block	Street	Segment	Side	Legal Spaces	Average Utilization (%)	Parking Turnover Rate (veh/stall/hr)	Violation Rate (%)*	Comments
38	North Prospect St.	CVS Private Lot	S	35	69%	-	-	peak utilization after noon
39	North Prospect St.	CVS Public Lot	N	69	62%	-	-	peak utilization after noon
40	N. Pleasant St.	Amity St. – Cowles Ln.	W	22	78%	-	-	peak utilization after noon
41	N.Pleasant St.	Main St. – Kellogg St.	E	19	73%	1.13	17%	peak utilization after noon
42	N.Pleasant St.	Kellogg St. – Cowles Ln.	E	3	84%	1.41	30%	high violations & peak utilization during survey time
43	N.Pleasant St.	Cowles Ln. – Hallock St.	E	7	82%	1.44	9%	high turnover rate & peak utilization at after noon
44	N. Pleasant St.	Cowles Ln. – Hallock St.	W	11	77%	-	-	peak utilization after noon
45	Pray St.	Public Lot	EW	32	28%	-	-	very low utilization during survey time
46	N. Pleasant St.	Hallock St. – McClellan St.	E	7	27%	-	-	very low utilization during survey time
47	N. Pleasant St.	McClellan St. – Triangle St.	W	19	100%	-	-	peak utilization from morning to early afternoon
48	McClellan St.	Beston St. – N.Pleasant St.	N	15	80%	-	-	peak utilization from late morning to early afternoon
49	Hallock St.	N.Pleasant St. - N.Prospect St.	N	20	17%	-	-	very low utilization during survey time
50	N.Prospect St.	Cowles St. - Hallock St.	W	35	73%	-	-	peak utilization at noon

*Violations included parked exceeded the time limited and parked in unauthorized locations
Definitions:
Average Utilization: the percentage of spaces in use on average throughout the day, assuming 90% of spaces can be utilized at one time
Turnover Rate: the number of different vehicles that parked in a given space during an average day per hour
Source: PVPC

Table 2
Parking Characteristics
Peak Hours Survey on Friday

Block	Street	Segment	Side	Legal Spaces	Peak Hours Average Utilization (%)	Peak Hours Parking Turnover Rate (veh/stall/hr)	Peak Hours Violation Rate (%)*	Comments
1	Main St.	Boltwood Walk - Churchill St.	S	15	73%	1.48	13%	high turnover rate & peak utilization at noon peak
2	Main St.	Boltwood Ave. - Boltwood Walk	S	3	67%	1.50	18%	high turnover rate & peak utilization at noon peak
3	Boltwoood Walk	Noah Webster House	EW	30	76%	1.06	18%	peak utilization at noon peak
4	Boltwoood Walk	Antonios Pizza	E	33	93%	-	-	peak utilization at noon & afternoon peak
5	Boltwoood Walk	Bangs Community Center	W	11	65%	-	-	peak utilization at afternoon peak
6	Boltwoood Walk	Unitarian Meeting House	E	15	88%	-	-	peak utilization at noon & afternoon peak
7	Boltwoood Walk	Ann Whalen House	W	21	89%	-	-	peak utilization at noon peak
8	Main St.	Lessey St. - Churchill St.	N	13	72%	1.53	9%	high turnover rate & peak utilization at noon peak
9	Lessey St.	Churchill St. - Boltwood Walk	N	10	82%	-	-	peak utilization at noon peak
10	Main St.	Churchill St. - Dickinson St.	N	22	10%	-	-	very low utilization during the survey time
11	Churchill St.	Main St. - Spring St.	W	7	96%	-	-	peak utilization at morning & noon peak
12	Churchill St.	Main St. - Spring St.	E	15	88%	-	-	peak utilization at morning & noon peak
13	Spring St.	Churchill St. - Boltwood Ave.	NS	43	92%	-	-	peak utilization at morning & noon peak
14	Spring St.	Seeyle St. - Churchill St.	N	9	18%	-	-	very low utilization during the survey time
15	Seeyle St.	College St. - Spring St.	W	15	76%	-	-	peak utilization at noon peak
16	Seeyle St.	Main St. - Spring St.	W	15	52%	-	-	very low utilization during the survey time
17	Spring St.	Dickinson St. - Seeyle St.	S	22	19%	-	-	very low utilization during the survey time
18	Boltwood Ave.	Main St. - Spring St.	E	8	86%	1.46	17%	peak utilization at noon & afternoon peak
19	Main St.	N.Pleasant St. - Boltwood Walk	N	13	92%	1.59	12%	peak utilization at noon & afternoon peak
20	Town Common	N.Pleasant St. - Main St.	NS	38	78%	-	-	peak utilization at noon & afternoon peak
21	Amity St.	N.Pleasant St. - S. Prospect St	S	13	80%	-	-	peak utilization at noon peak
22	Amity St.	N.Pleasant St. - N. Prospect St.	N	12	89%	-	-	peak utilization at noon & afternoon peak
23	Amity St.	Amherst Cinema	EW	34	72%	-	-	peak utilization at noon & afternoon peak
24	N. Prospect St.	Amity St. - Cowles Ln.	W	5	51%	-	-	low utilization during survey time
25	Amity St.	S.Prospect St. - Lincoln Ave.	NS	36	76%	-	-	peak utilization at morning peak
26	S. Prospect St.	Amity St. - Gaylord St.	W	4	57%	-	-	peak utilization at afternoon peak
27	S. Prospect St.	Amity St. - Northampton Rd.	W	33	75%	-	-	peak utilization at morning peak
28	Sellen St.	N.Pleasant St. - S. Prospect St.	N	12	50%	-	-	very low utilization during the survey time
29	S. Pleasant St.	College St. - Hitch Rd.	W	15	67%	-	-	low utilization during survey time
30	S. Pleasant St.	College St. - Spring St.	E	13	51%	-	-	very low utilization during the survey time
31	Boltwood Ave.	College St. - Spring St.	W	9	25%	-	-	very low utilization during the survey time
32	Boltwood Ave.	College St. - Spring St.	E	15	28%	-	-	very low utilization during the survey time
33	Boltwood Ave.	College St. - Spring St.	W	12	51%	-	-	very low utilization during the survey time
34	Boltwood Ave.	College St. - Spring St.	E	11	39%	-	-	very low utilization during the survey time
35	S.Pleasant St.	Amity St. - Sellen St.	W	16	72%	1.56	6%	high turnover rate & peak utilization at afternoon peak
36	S.Pleasant St.	Main St. - Spring St.	E	5	73%	1.23	3%	peak utilization at afternoon peak
37	Spring St.	S. Pleasant St. - Boltwood Ave.	N	15	69%	-	-	peak utilization at noon & afternoon peak

Table 2 (Continued)
Parking Characteristics
Peak Hours Survey on Friday

Block	Street	Segment	Side	Legal Spaces	Peak Hours Average Utilization (%)	Peak Hours Parking Turnover Rate (veh/stall/hr)	Peak Hours Violation Rate (%)*	Comments
39	North Prospect St.	CVS Public Lot	N	69	72%	-	-	peak utilization at noon peak
40	N. Pleasant St.	Amity St. - Cowles Ln.	W	22	85%	-	-	peak utilization at noon & afternoon peak
41	N.Pleasant St.	Main St. - Kellogg St.	E	19	86%	1.76	8%	high turnover rate & peak utilization at noon and afternoon peak
42	N.Pleasant St.	Kellogg St. - Cowles Ln.	E	3	76%	1.89	16%	high turnover rate & high violation rate & peak utilization at afternoon peak
43	N.Pleasant St.	Cowles Ln. - Hallock St.	E	7	90%	1.86	4%	high turnover rate & very high utilization during survey time
44	N. Pleasant St.	Cowles Ln. - Hallock St.	W	11	97%	-	-	very high utilization during the survey time
45	Pray St.	Public Lot	EW	32	50%	-	-	very low utilization during the survey time
46	N. Pleasant St.	Hallock St. - McClellan St.	E	7	35%	-	-	very low utilization during the survey time
47	N. Pleasant St.	McClellan St. - Triangle St.	W	19	89%	-	-	peak utilization at morning & noon peak
48	McClellan St.	Beston St. - N.Pleasant St.	N	15	99%	-	-	peak utilization at morning & noon peak
49	Hallock St.	N.Pleasant St. - N.Prospect St.	N	20	10%	-	-	very low utilization during the survey time
50	N.Prospect St.	Cowles St. - Hallock St.	W	35	75%	-	-	peak utilization at morning peak

*Violations included parked exceeded the time limited and parked in unauthorized locations

Definitions:

Average Utilization: the percentage of spaces in use on average throughout the day, assuming 90% of spaces can be utilized at one time

Turnover Rate: the number of different vehicles that parked in a given space during an average day per hour

Source: PVPC

In conclusion, the entire study area's parking capacity is highly utilized throughout the day. This shows the need for either increasing the existing parking supply or providing parking demand management strategies to alleviate traffic and parking conditions. In addition, some parking areas have a very low utilization rate and some parking areas have an extremely high utilization rate. This indicates that drivers are not willing to park a great distance from their desired destination. They will fill up closer areas before using remote parking facilities even if there is a considerable price difference. This can cause severe illegal parking problems at highly utilized parking areas. Illegal parking creates safety hazards for both pedestrians and other motorists, especially when the movement of emergency vehicles is obstructed.

The Town of Amherst may wish to consider the following recommendations on improving the existing parking conditions within the study area:

- Installation of parking signs in the Boltwood Walk and CVS parking lots can direct drivers to underutilized off-street parking lots, such as Amity and Pray Street parking lots during overflow conditions.

- The existing parking facilities can be more efficiently utilized by the delineation of parking spaces at proposed CBD permit areas.

- The Town may want to consider changing the one hour meters on North Pleasant Street between Cowles Land to Hallock Street (block 43) to one half hour meters.

- The Town may want to consider changing the one hour meters on Boltwood Walk in front of the Noah Webster House (block 3) to two hour meters.

- The existing parking supply should be evaluated at the vicinity of Lessey Street as many vehicles were observed to park unmarked free spaces and in posted no-parking zones.

The proposed parking garage for downtown Amherst (capacity of approximately 200 parking spaces) would assist in reducing the existing parking supply problem in the study area. This garage would serve the needs of long-term parkeres currently utilizing residential side streets to obtain free parking. The Town should consider replacing 5-10 of the existing 2 hour meters in the Amity Street lot with 8 hour parking meters. If successful, additional long-term meters could be added to key parking areas in downtown to address long-term parking needs.

As the Town currently proposed, the CBD parking area permits would only be sold to local businesses and residents. Once implemented, many vehicles will be forced to find new areas to meet their parking needs. While a percentage of these vehicles can be expected to shift to existing metered spaces, many vehicles will attempt to find new "free" locations to park. The Town of Amherst should monitor the situation to determine that if the proposed CBD permit areas need to be expanded.

As the demand for parking continues to increase, the Town many want to consider park and ride lots with shuttle bus service. These fringe parking areas could be places along existing PVTA bus routes and serve the future parking needs of the town.